

SECTION I. REGISTRATION COMPUTATION

ACHIEVED RANGE				DEFLECTION CORRECTION			
1	CHART RANGE	(10 METERS)		7	CORRECTED DEFLECTION (REGISTRATION)	(1 MIL)	
2	REGISTERING PIECE DISPLACEMENT (F-B+)	(10 METERS)		8	REGISTERING PIECE DISPLACEMENT CORRECTION (6) (L+R)	(1 MIL)	
3	ACHIEVED RANGE ((1) + (2))	(10 METERS)		9	ADJUSTED DEFLECTION ((7) + (8))	(1 MIL)	
REGISTERING PIECE DISPLACEMENT CORRECTION				10	CHART DEFLECTION	(1 MIL)	
4	LATERAL DISPLACEMENT (L/R)	(5 METERS)		11	TOTAL DEFLECTION CORRECTION (9) - (10) (+/-)	(1 MIL)	
5	ACHIEVED RANGE (3) ÷ 1000	(10 METERS)		12	DRIFT CORRECTION (-ADJUSTED ELEVATION) (L)	(1 MIL)	
6	REGISTERING PIECE DISPLACEMENT CORRECTION (4) ÷ (5) L+R	(1 MIL)		13	GRAPHICAL FIRING TABLE (GFT) DEFLECTION CORRECTION ((11) - (12))	(1 MIL)	

GFT SETTING (MANUAL METHOD)							DEFLECTION CORRECTION	
14	GFT	CHARGE	LOT	RANGE	ELEVATION	TIME	TOTAL	GFT
15	GFT	CHARGE	LOT	RANGE	ELEVATION	TIME		
16	GFT	CHARGE	LOT	RANGE	ELEVATION	TIME		

GFT SETTING (COMPUTER METHOD)							
17	AFU;REG	LOT	RANGE	RANGE CORRECTION	TIME CORRECTION	DEFLECTION CORRECTION	
18	BUCS RESIDUALS	LOT	DEFLECTION CORRECTION L R	FLUX K + / -	RANGE K + / -		

TERRAIN GUN POSITION / SPECIAL CORRECTION													
REMARKS				L / P / R SECTOR TRANSFER LIMITS CHG _____									
				LEFT CENTER RIGHT									
				CEN DF + 400 m		DF				DF	CEN DF - 400 m		
CEN RG - 2000 M		RG	(MIN)			(MAX)	RG	CEN RG + 2000 M					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
GUN	POS LATERAL CORR (L/R)	100/R GFT* () CEN RG	POS DF CORR (L/R) (1) X (2) 100	BTRY COMP VE (/D)	MV Unit Corr Fac (Tbl F) D+ I+	MV RG Corr (4) X (5)	POS RG CORR (F= -) (B= +)	TOTAL RG Corr (6) + (7)	POS EL CORR (8) + DR PER 1m D EL (TBL F)	CORR RG (8) ≈ 10M Plus CEN RG*	FS - (10)	POS TI CORR (11) MINUS FS - CEN RG ()	GUN
#	5M		1 m	0.1 M/S	0.1 M	1 M	5 M	1 M	1 m	10 M	0.1	0.1	#
1													1
2													2
3													3
4													4
5													5
6													6
7													7
8													8

SECTION II. HASTY TGPC					CHARGE		
INITIAL CHART DATA			RANGE		DEFLECTION		
	POSITION LATERAL CORRECTION (LEFT/RIGHT)	HASTY POSITION DEFLECTION CORRECTION ~ (C)	COMPARATIVE MUZZLE VELOCITY	HASTY MUZZLE VELOCITY CORRECTION ~ (C)	POSITION RANGE CORRECTION (FORWARD - BACK +)	HASTY POSITION QUADRANT ELEVATION CORRECTION	TOTAL QUADRANT ELEVATION CORRECTION (g) + (f)
GUN	a 5 METERS	b AS LISTED	c 0.1 METER PER SECOND	d AS LISTED	e 5 METERS	f AS LISTED	g 1 MIL
1							
2							
3							
4							
5							
6							
7							
8							

TGT	BTRY	DTG	* FOR SPECIAL CORR USE CHART RANGE TO TARGET

MUZZLE VELOCITY RECORD For use of this form, see FM 6-40; the proponent agency is TRADOC.							DATE POWDER MODEL		
FIRST-LOT CALIBRATION									
SHELL/FAMILY	FIRST POWDER LOT NUMBER	GUN NUMBER/CHARGE FIRED							
ITEMS		1/	2/	3/	4/	5/	6/	7/	8/
1. WEAPON BUMPER NUMBER									
2. WEAPON TUBE NUMBER									
3. FIRST-LOT CHARGE STANDARD MUZZLE VELOCITY (FROM TABULAR FIRING TABLE (TFT))									
4. CALIBRATED MUZZLE VELOCITY (BATTERY COMPUTER SYSTEM (BCS) ENTRY)									
5. FIRST-LOT PIECE MUZZLE VELOCITY VARIATION (LINE 4 - LINE 3 = LINE 5)									
SECOND-LOT CALIBRATION									
SHELL/FAMILY	POWDER GROUP	GUN NUMBER/CHARGE FIRED							
ITEMS		1/	2/	3/	4/	5/	6/	7/	8/
6. SECOND-LOT CHARGE STANDARD MUZZLE VELOCITY (FROM TFT)									
7. SECOND-LOT CALIBRATED MUZZLE VELOCITY									
8. SECOND-LOT PIECE MUZZLE VELOCITY VARIATION (LINE 7 - LINE 6 = LINE 8)									
9. FIRST-LOT PIECE MUZZLE VELOCITY VARIATION (LINE 5)									
10. CHANGE IN MUZZLE VELOCITY VARIATION (LINE 8 - LINE 9 = LINE 10)									
SECOND-LOT INFERENCE									
11. SECOND-LOT STANDARD MUZZLE VELOCITY (FROM TFT)									
12. CHANGE IN MUZZLE VELOCITY VARIATION (LINE 10)									
13. FIRST-LOT MUZZLE VELOCITY VARIATION (LINE 5)									
14. SECOND-LOT CALIBRATED MUZZLE VELOCITY VARIATION (LINE 12 + LINE 13 = LINE 14)									
15. CALIBRATED MUZZLE VELOCITY (BCS ENTRY) (LINE 11 + LINE 14 = LINE 15)									
REMARKS									

M90 VELOCIMETER WORK SHEET

For use of this form, see FM 6-40; the proponent is TRADOC.

CHARGE GROUP	DATE AND TIME				PROJECTILE FAMILY			
PROJECTILE MODEL	POWDER LOT NUMBER				PROJECTILE WEIGHT			
CALIBRATION DATA								
ITEMS	GUN 1 CHARGE	GUN 2 CHARGE	GUN 3 CHARGE	GUN 4 CHARGE	GUN 5 CHARGE	GUN 6 CHARGE	GUN 7 CHARGE	GUN 8 CHARGE
<i>a</i>								
1. WEAPON BUMPER NUMBER								
2. WEAPON TUBE NUMBER								
3. STARTING POWDER TEMPERATURE								
4. ENDING POWDER TEMPERATURE								
5. AVERAGE POWDER TEMPERATURE								
M90 VELOCIMETER READOUT								
ROUND 1								
ROUND 2								
ROUND 3								
ROUND 4								
ROUND 5								
ROUND 6								
ROUND 7								
ROUND 8								
READOUT AVERAGE								
M90 VELOCITY COMPUTATION								
6. MUZZLE VELOCITY CORRECTION FOR NONSTANDARD CONDITIONS								
7. CALIBRATED MUZZLE VELOCITY								
8. NUMBER OF WARMUP ROUNDS FIRED								
REMARKS								

FIELD ARTILLERY DELIVERED MINEFIELD PLANNING SHEET

For use of this form see FM 6-20-40 or FM 6-20-50; the proponent agency is TRADOC.

SECTION A-MINEFIELD DATA

1 TARGET NUMBER	2 PRIORITY	3 REQUESTER
4 MINEFIELD END POINTS (COORDINATES) FROM _____ TO _____		
5 MINEFIELD DEPTH	6 MINEFIELD WIDTH	
7 ADAM (APERS) DENSITY	8 RAAMS (AT) DENSITY	
9 SELF DESTRUCT TIME SHORT <input type="checkbox"/> LONG <input type="checkbox"/>		10 SCHEDULED MINEFIELD _____ HRS _____ MIN ON-CALL <input type="checkbox"/>
11 CAUTION NLT EMPLACEMENT TIME	12 APPROVAL AUTHORITY	13 DATE TIME GROUP (DTG)
14 REMARKS		

SECTION B-G3/S3/ENGR

15 DTG RECEIVED	16 DTG SAFETY ZONE DISSEMINATED
17 REMARKS	

SECTION C-FSE/FSO

18 DTG TO UNIT	19 DTG FROM UNIT	20 DTG TO G3 S3 ENGR
21 REMARKS		

SECTION D-FDC DATA

22 TARGET NUMBER	23 FIRING UNIT	24 RANGE TO MINEFIELD CENTER
25 TRAJECTORY ADAM <input type="checkbox"/> HIGH <input type="checkbox"/> LOW RAAMS <input type="checkbox"/> HIGH <input type="checkbox"/> LOW		26 DELIVERY TECHNIQUE MET + VE TRANSFER <input type="checkbox"/> OBSERVER ADJUST <input type="checkbox"/>
27 AIMPOINT COORDINATE(S) (LEFT AND RIGHT OR SINGLE) ADAM FROM _____ TO _____ RAAMS FROM _____ TO _____		
28 DTG MISSION COMPLETED		
29 REMARKS		

[illegible]

REVERSE OF DA FORM 5032-R

COMPUTER CHECKLIST

For use of this form, see FM 6-40. The proponent agency is TRADOC.

FIRE ORDER STANDARDS				ADJUST FIRE	FIRE FOR EFFECT	PIECE DISPLACEMENT DATA			
1. UNIT TO FIRE						GUN NUMBER	GRID	DISPLACEMENT	
2. ADJUSTING ELEMENT/METHOD OF FIRE OF ADJUSTING ELEMENT								LATERAL	RANGE
3. BASIS FOR CORRECTION						1			
4. DISTRIBUTION						2			
5. PROJECTILE						3			
6. AMMUNITION LOT/CHARGE						4			
7. FUZE						5			
8. NUMBER OF ROUNDS						6			
9. RANGE SPREAD, LATERAL SPREAD, ZONE OR SWEEP						7			
10. TIME OF OPENING FIRE						8			
11. TARGET NUMBER						AIMING CIRCLE			
FIRE COMMAND STANDARDS				ADJUST FIRE	FIRE FOR EFFECT	PRIORITY TARGET INFORMATION FINAL PROTECTIVE FIRE/ COPPERHEAD			
12. WARNING ORDER						GRID		TARGET NUMBER	
13. PIECE TO FOLLOW/PIECE TO FIRE/METHOD OF FIRE									
14. SPECIAL INSTRUCTIONS									
15. PROJECTILE									
16. AMMUNITION LOT									
17. FUZE/FUZE SETTING									
18. DEFLECTION									
19. QUADRANT									
20. METHOD OF FIRE									
BATTERY AMMUNITION COUNT	BATTERY DATA	GRID/ALTITUDE	AZIMUTH	CALL SIGN	24. FIRE PLAN				
					KNOWN POINT/ TARGET	LOCATION	TIME ON TARGET	UNIT OF FIRE	
BATTERY GFT SETTING									
21. HIGH EXPLOSIVE									
22. DUAL-PURPOSE IMPROVED CONVENTIONAL MUNITIONS									
23. ROCKET-ASSISTED PROJECTILES									
REMARKS									

COPPERHEAD PLANNED TARGET LIST WORK SHEET

For use of this form, see FM 6-40. The proponent agency is TRADOC.

[illegible]

REMARKS

UNIVERSAL SAFETY T

For use of this form, see FM 6-40. The proponent agency is TRADOC.

FP:	GRID:	ALT:										
AOL:	DATE:	CHARGE AND TYPE:										
ANGLE OF FIRE:		SHELL(s):										
<div style="display: flex; justify-content: space-between; align-items: flex-start;"><div style="border: 1px solid black; width: 60%; height: 100px; margin: 10px auto;"></div><div style="text-align: right; margin-top: 10px;">MAX QE</div></div> <div style="display: flex; justify-content: space-between; align-items: center; margin: 10px 0;"><div style="border: 1px solid black; width: 80%; height: 50px;"></div><div style="text-align: right;">DF LIMITS</div></div> <table border="1" style="width: 60%; margin: 10px auto;"><tr><td style="height: 40px;"></td><td style="text-align: right;">MIN QE ()</td></tr><tr><td style="height: 40px;"></td><td style="text-align: right;">MIN QE ()</td></tr><tr><td style="height: 40px;"></td><td style="text-align: right;">MIN TI () ()</td></tr><tr><td style="height: 40px;"></td><td style="text-align: right;">MIN TI () ()</td></tr><tr><td style="height: 40px;"></td><td style="text-align: right;">MIN VT ()</td></tr></table>				MIN QE ()		MIN QE ()		MIN TI () ()		MIN TI () ()		MIN VT ()
	MIN QE ()											
	MIN QE ()											
	MIN TI () ()											
	MIN TI () ()											
	MIN VT ()											

NOTE: Enter inside the parentheses following "MIN QE" and "MIN TI" the type of shell(s) for which safety was computed. Enter inside the parentheses under "MIN TI" and next to "MIN VT" the type of fuzes for which safety was computed.

M712 COPPERHEAD MET + VE WORK SHEET

For use of this form, see FM 6-40. The proponent agency is TRADOC.

NOTE: Use FT 155-AS-1

STEP	ACTION	VALUE	STEP	ACTION	VALUE
1	Record the Chart Rg to Tgt		26	Record Dir of Fire [25] (100)	
2	Record the Chart Df to Tgt		27	Record 6400 (If [26] > 6400)	
3	Record Obsr Visibility		28	Compute Dir of Fire [26] - [27]	
4	Record Obsr Cld Ht		29	Record Wind Direction [17]	
5	Record Tgt Altitude		30	Record 6400 (If [29] < [28])	
6	Record Obsr Altitude		31	Compute Wind Direction [29] + [30]	
7	Compute OT VI [5] - [6]		32	Record Dir of Fire [28] (100)	
8	Compute Tgt Cld Ht [4] - [7]		33	Compute Chart Dir Wind [31] - [32]	
9	Enter Chg, Visibility, Cld Ceiling Tbl With [1], [3], [8]; Extract Change and Mode		34	Enter Tbl C With [33]; Record the Range Wind Component	
10	Record Tgt Altitude [5]		35	Record Wind Speed [18]	
11	Record Btry Altitude		36	Compute Rg Wind [34] X [35] (1 knot)	
12	Compute VI [10] - [11]		37	Enter Tbl C With [33]; Record the Crosswind Component	
13	Compute \times Si (GST) [12], [1]		38	Record Wind Speed [18]	
14	Enter Tbl F With [1]; Record EI From Col 3		39	Compute Crosswind [37] X [38] (1 knot)	
15	Compute Trial QE VI [13] + [14]		40	Enter Tbl F With [1]; Record the Crosswind Correction	
16	Enter Tbl A With [15]; Record Met Message Line Number		41	Compute Tot Df Corr [39] X [40] (1 mil)	
17	Record Wind Dir		42	Record Chart Df [2]	
18	Record Wind Speed		43	Compute Df to Fire [41] + [42]	
19	Record Air Temp		44	Record Btry Altitude [11] (10 meters)	
20	Record Air Density		45	Record MDP Altitude From Met Msg	
21	Record Common Df		46	Compute Δh [44] - [45]	
22	Record Chart Df [2]		47	Enter Tbl D With [46]; Record the Temp Correction	
23	Compute Difference [21] - [22] (+/-)		48	Record Air Temp [19]	
24	Record AOL		49	Compute Corr Air Temp [47] + [48]	
25	Compute Dir of Fire [23] + [24] (1 mil)		<div style="display: flex; justify-content: space-between;"> DTG Tgt Number </div>		

M712 COPPERHEAD MET + VE WORK SHEET					
STEP	ACTION	VALUE	STEP	ACTION	VALUE
50	Enter Tbl D With [46]; Record the Density Corr		73	Compute Corr Air Density [52]	
51	Record Air Density [20]		74	Enter 100	
52	Compute Corr Air Density [50] + [51]		75	Compute Variation From Std [73] - [74]	
53	Record Propellant Temp		76	Enter Tbl F With [1] ; Record the Density	
54	Enter Tbl E With [53]; Record the Change in MV (0.1 m/s)		77	Compute Density Rg Corr [75] X [76] (0.1)	
55	Record MVV; Go to [62]; If Unknown, Enter 0; Go to [56]		78	Record ΔV Rg Corr [64]	
56	Record Pullover Gauge Reading		79	Compute Rg Wind Corr [67]	
57	Enter Approx Loss in MV Tbl With [56], EFCs Equal to [56]		80	Record Air Temp Corr [72]	
58	Record the Erosion EFCs Since Last Pullover Gauge Reading		81	Compute Tot Rg Corr [77] + [78] + [79] + [80] (10 meters)	
59	Compute Total EFCs [57] + [58]		82	Record Chart Rg [1]	
60	Enter Approx Loss in MV Tbl With [59], Record Loss in MV		83	Compute Corr Rg [81] + [82]	
61	Record Propellant Efficiency		84	Enter Tbl F With [83]; Interpolate the EI From Col 3 (1 mil)	
62	Compute ΔV [54] + [55] or [54] + [60] + [61] (I/D) (If no MVV available)		85	Record ✕ Si [13]	
63	Enter Tbl F With [1]; Record the MV Unit Correction		86	Enter Tbl G With [82]; Record the CSF for 1 mil Angle of Site	
64	Compute ΔV Rg Corr [62] X [63]		87	Compute CAS [85] X [86] Same Sign as [86] (0.1 mil)	
65	Record Range Wind [36]		88	Record ✕ Si [85]	
66	Enter Tbl F With [1] ; Record the Rg Wind Correction		89	Compute Si [87] + [88]	
67	Compute Rg Wind Corr [65] X [66] (0.1)		90	Record EI [84] (1 mil)	
68	Record Corr Air Temp [49]		91	Compute QE to Fire [89] + [90]	
69	Enter 100		92	Enter Tbl F With [83]; Record the Time Setting	
70	Compute Variation From Std [68] - [69]		93	Record Switch Setting [92] Followed by Obsr PRF Code	
71	Enter Tbl F With [1] ; Record the Air Temp Rg Unit Corr		94	Enter Tbl F With [83]; Record the Designate Time	
72	Compute Air Temp Rg Corr [70] X [71] (0.1 meter)		Firing Data Chg [9] _____ Switch Setting [93] _____ Df [43] _____ QE [91] _____		